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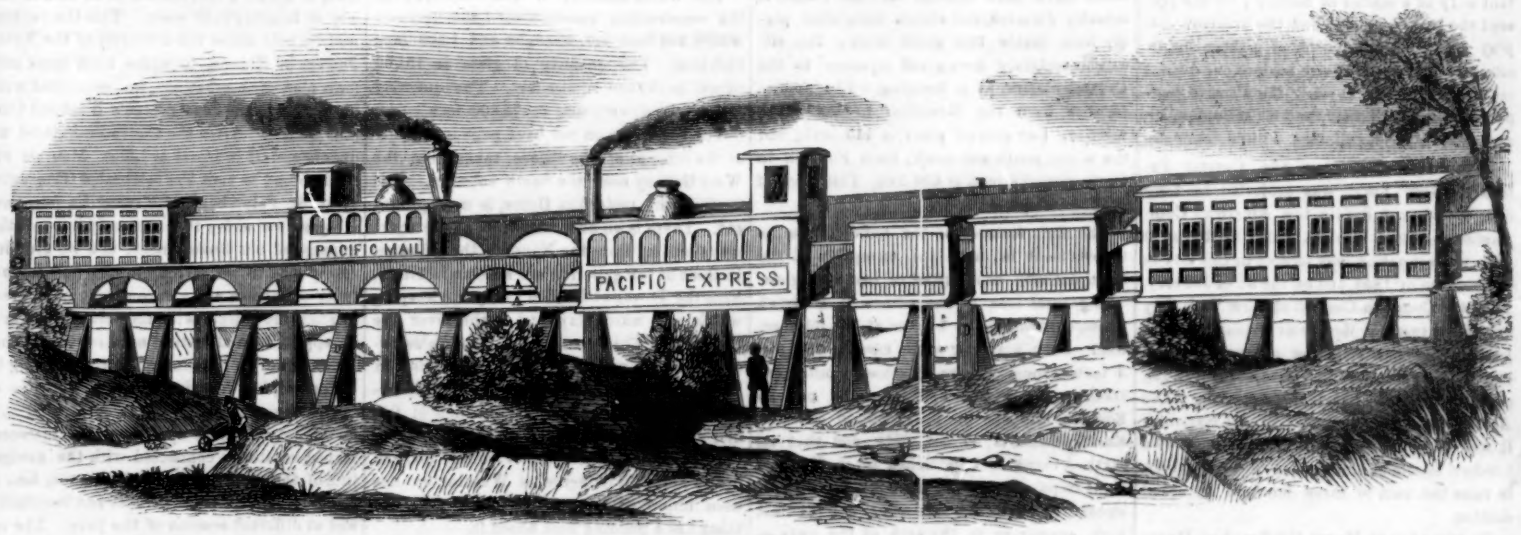
IMPROVEMENT IN RAILROADS.

The annexed engravings are views of an improvement in Railroads, by Robt Mills, Civil Engineer and Architect, Washington, D.C., the object of which is to attain a very high speed, and at the same time prevent accidents by running off the track, or by collisions.—Figure 1 is a picturesque view of a double track, representing two trains running in opposite directions, and figure 2 is a transverse section of a car and track. A A are friction rails; B B are the wheel rails; C, figure 2, is the connecting beam between the two tracks; D are the supporting posts; E is a part of the car; and F F are the friction wheels. The same letters refer to like parts.

This plan of railroad is proposed for the "New Pacific Railroad Line." At an early period in the history of railroads in the United States, Mr. Mills turned his attention to this subject, and recently he has become again interested in it by the many serious accidents which taken place in various parts of our country.

Such have been the character of these disasters, that they afford evidence of a serious defect in the system, and the question comes up, is there any other plan of constructing railroads that will insure the traveller from any or all of the accidents to which the present plan is liable? Before any railroad for travel had been constructed in this country or in Europe, Mr. Miles brought to the attention of the then Post-Master General, in 1820 (Judge McLean, now of the U. S. Supreme Court) a railroad upon a new and economical plan of construction for carrying the U. S. Mail, to communicate between Washington and New Orleans. Locomotive engines had not been then used for railroads, and the motive power of this road was by a relay of horses, as used then in the stages. As this railroad was expressly for carrying the mail, it was proposed to be built by the United States.

Figure 1.

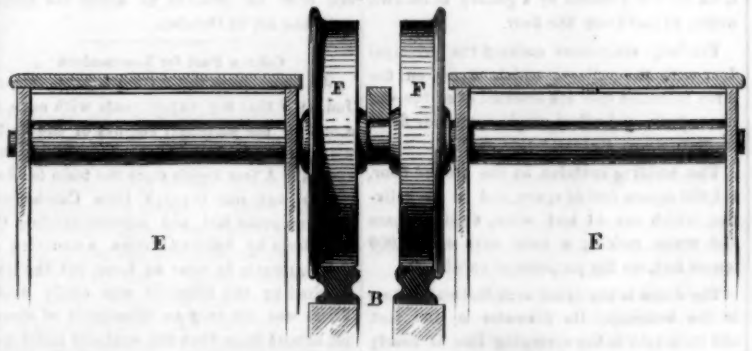


At that early period in our government, it appeared too great an undertaking, and however favorable the Postmaster General's opinion might be of the plan, his desire was, that we should first construct a railroad to Philadelphia. As Mr. Mills then resided in South Carolina, other objects engaged his attention. Upwards of twenty years have passed under the execution of the present system of constructing railroads, and immense sums of money have been expended upon them, their value as a system has been universally acknowledged, but these roads have shown in practice a defect for rapid traveling. There is a liability to accidents, which render it necessary to examine into the practicability of so constructing them, that would enable travellers to pursue their journey in safety, even under a speed of one hundred miles per hour, free from the apprehension of danger, either from flying off the track, coming in collision with opposing trains, or subjecting the unfortunate pedestrian crossing the track to fatal injury or death.

The general character of this plan of railroad may be judged of by the picturesque view, figure 1. It will be seen that each way consists of but a single track elevated above the ground, so that the cars suspended on each side of the track will be so far elevated as not to be subject to the least possible interruption. The cars instead of being supported by the axle, as now, are suspended from the axle, on each side of the rails, the wheels running duplicate on the top of the rails, and having a broad fulcrum of sixteen or eighteen inches base to sustain the cars in equilibrium, any difference of the load on either side of the rails will not affect its vertical position; but to meet any exigency another rail, one on each side, is placed sideways against the upright pillars at the bottom line of the cars, which, by means of friction rollers placed on the lowest inner edge of the cars, will insure the vertical position of the carriage, and thus the motion of the cars will be easy and free from change.

The wheels and rails are of the common pattern, but for greater security the wheels may be made with two flanges. Little grading will be required by such a road, and neither animals nor pedestrians will ever be the cause of an accident to themselves or a train.

Figure 2.



Mr. Mills proposes this plan as "The Pioneer Railway of the Pacific," a track could be laid down much sooner than by the present mode of constructing railroads, and at far less expense. For economy the material for this road may be of timber. The timber for a double track, says Mr. Mills, may not exceed $2,000 per mile, and the cost of iron rails about $6,000 per mile, and cost of iron about $2,000—total, $10,000 per mile.

The construction of this plan of railway possesses great economy, with more permanency than belongs to the same material used in the present railroads, the timbers being placed or used above instead of under the ground, will continue in a sound state, while that under ground will have rotted away. The combination of two tracks in this plan of railway, furnishes the means, by the cross ties, of giving more stability to either track, while it provides a free passage for the return trains, and thus avoids the danger of a collision of cars. Where it is wished to combine architectural effect with this construction, the space between the posts or pillars, under the rail, may be arched, and while thereby strengthening the mass, will give them the effect of a continuous arcade.

From the elevated position of the wheel track, little apprehension exists of its retaining any substance that would act as an obstruction to the wheel, and therefore little fear exists of the wheels running off the rail, and such guards may be provided in front of the train as would secure it from such a disaster.

Mr. Mills, in his letter to us on the subject says: "I would state that I purpose to submit this plan to Congress for the conveyance of the U. S. Mail to the Pacific, which could be accomplished from the Mississippi river in 24 hours, or a day and night. The elevated position given this railway would, while it will insure its safe travel, furnish the means of providing a series of dwellings below, for the operatives and others on the roads, especially in the crossings of ravines and sinkings in the country, thus a series of personal guards would be provided *pari passu* with the work.

Steamboat Inspectors.

MESSRS. EDITORS.—I thank you for directing attention to the gross neglect of duty on the part of the Steamboat Inspectors in reference to the want of provision made by some of our ferry companies to meet the demands of the New Steamboat Law. Those men should resign or do their duty promptly. If they are not fit to do their duty, let others be appointed in their places; if fit, why do they neglect to enforce the law. R. G.,

One who crosses the ferry.

[The above refers to our remarks last week respecting the total absence of life-boats and life preservers on some of our ferry boats.—Some of these ferry boats have neither a single life-boat nor preserver on board, and yet their cabins and decks are often crowded with between five and six hundred passengers. These ferry companies and the new Inspectors for them and themselves, may make as many excuses as they please, but there is no room for excuse in such palpable defiance of a new and excellent law to prevent accidents. We hope the authorities at Washington will see to it that the men they have appointed here and everywhere to carry out this law, do their duty faithfully without partiality. There is so much power in the hands of the inspectors, that unless they do their duty, the law will be no better than an old song.

Ship Canal at Saut St. Marie.

Under the contract made for the construction of this work, by the State of Michigan, the excavation has reached the bottom of the canal at two points, and for many rods is within a foot or two of the required depth. The work is progressing along more than half the extent of the canal.

THE CRYSTAL PALACE

THE BUILDING—We present, in this number, a beautiful interior view of the Crystal Palace, together with a plan of the same, showing the order in which the space is apportioned to the different contributing nations. In No. 6 of this volume, we published a beautiful perspective view of the exterior, the design of which was taken from the drawings of the architects. These engravings and the pages which we shall devote to description, criticism and reviews of articles on exhibition, will be found exceedingly useful for future reference, as we intend to devote much time and space to the prominent and worthy objects on Exhibition. As soon as the machinery department is in order we shall give it special attention. Our readers generally are more interested in solid productions than in ornaments and tinselry. We presented a brief history of the origin and progress of the Crystal Palace, with the engraving published in No. 6, but as some controversy has recently sprung up on the subject, we will again briefly revert to the circumstances connected with its organization and subsequent career; this is important only as a matter of history; for the present the building itself, and the brilliant display within it, are objects of greater public interest. We would advise such of our distant readers as intend to visit the Fair to postpone coming until after the first of September, at that time the Exhibition will be complete.

It is understood that the Crystal Palace in New York, was projected in London, by Edward Riddle, the American Commissioner at the World's Fair; be that as it may, an association was formed in this city in the autumn of 1851, and on the 3d of January, 1852, the Common Council of New York City granted a lease of Reservoir Square for five years, to erect a structure of iron and glass, and on the 11th of March succeeding, the Legislature granted a charter incorporating "The Association for the Industry of All Nations." It was incorporated with a capital of two hundred thousand dollars, leave being given to raise the sum to three hundred thousand dollars.

On the 17th of March the Board of Directors met, and organized by the election of Theodore Sedgwick, Esq, President, and William Whetten, Esq., as Secretary; and the Association immediately published a general statement of the objects of the enterprize.

The stock was soon taken and distributed among a large number of persons. Application was then made to our government to admit foreign goods for exhibition, duty free; and on the 24th of May, Mr. Maxwell, Collector of the Port of New York, made a written communication to the President of the Association, stating that the building, when erected, would be made a bonded warehouse, so as to receive the goods free of duty, while on exhibition.

In the month of July, 1852, we think it was, the Association selected C. E. Detmold as Superintending Architect and Engineer; Horatio Allen, Consulting Engineer; and Edmund Hurry, Consulting Architect,—and confided to them the whole charge of selecting plans and constructing an appropriate building. Proposals were soon advertised for plans for the New Crystal Palace, and we saw a number of them before they were presented. Paxton, the designer of the London Crystal Palace, furnished a very beautiful one, but the peculiar shape of the ground to be occupied, rendered it impossible to use it. The late lamented Mr. Downing offered another of striking ingenuity, but this was also excluded by the terms of the grant from the city, which, as has been said, peremptorily required that the building should be exclusively of iron and glass. Leopold Eidlitz presented a plan with a suspension roof, intended to obviate the difficulty of spanning great widths by arches.

James Bogardus, of this city, the most experienced builder of cast-iron houses in our country, submitted one of a circular building, consisting of successive colonades, placed one over the other, somewhat resembling the Colosseum at Rome, and involving a new mode of joining, for which he has obtained a patent, also a new mode of forming it with a suspension roof, which would have afforded a wide field for artistic display, far surpassing the plan adopted. Julius W. Adams, formerly editor of "Appleton's Mechanic's Magazine," presented one of a great octagonal vault or dome, supported by ribs made of fasces or clusters of gas pipe. Several other plans were offered, of great beauty and originality. The board, however, after much consultation, finally determined on one submitted by Messrs. Carstensen and Gildemeister. Mr. Carstensen is the designer of the Tivoli and Casino, of Copenhagen, in Denmark, the principal public grounds of that city. The plan was adopted on the 26th August, and no time was lost in putting the work under way.

The contracts for the work were soon given out, and distributed at pretty low prices, among a great number of firms, a circumstance to which we alluded at the time, and asserted that it would be the means of delaying the construction of the building; this was actually the case. The building is situated on Reservoir Square, which derives its name from the Croton Distributing Reservoir, a vast work of colossal strength standing directly above it. Not a more unfortunate spot could have been chosen, for the Palace is actually dwarfed, and stands somewhat pigmy-like, beside this great work; the situation certainly does great injustice to the Crystal Palace as a building. The precise distance from the Reservoir to the Sixth Avenue, (see ground plan) is 445 feet; and the width, north and south, from Fortieth to Forty-second street, is 455 feet. This piece of ground is square.

The main features of the building are as follows:—It is, with the exception of the floor, entirely constructed of iron and glass. The general idea of the edifice is a Greek Cross, surmounted by a dome at the intersection. Each diameter of the cross is 365 feet 5 inches long. There are three similar entrances, one on the Sixth Avenue, one on Fortieth and one on Forty-second street.—Each entrance is 47 feet wide, and that on Sixth Avenue is approached by a flight of eight steps. Over each front is a large semi-circular fan-light, 41 feet wide and 21 feet high, answering to the arch of the nave.—Each arm of the cross is on the ground plan 149 feet broad. This is divided into a central nave and two aisles, one on each side; the nave 41, each aisle 54 feet wide. The central portion or nave is carried up to the height of 67 feet, and the semi-circular arch by which it is spanned, is 31 feet broad. There are thus in effect two arched naves crossing each other at right angles, 41 feet broad, 67 feet high to the crown of the arch, and 365 feet long; and on each side of these naves is an aisle 43 feet broad and 45 feet high. The exterior of the ridgeway of the nave is 71 feet. Each aisle is covered by a gallery of its own width, 25 feet from the floor.

Ten large stair-cases connect the principal floor with the gallery, which opens on the three balconies that are situated over the entrance halls, and afford ample space for flower decorations, statues, vases, &c.

The building contains, on the ground floor, 111,000 square feet of space, and in its galleries, which are 54 feet wide, 62,000 square feet more, making a total area of 173,000 square feet, for the purposes of exhibition.

The dome is the grand architectural feature of the building. Its diameter is 100 feet, and its height to the springing line is nearly 70 feet, and to the crown of the arch 123 feet. It is supported by 24 columns, which rise beyond the second story, and to a height of 62 feet above the principal floor. The system of wrought iron trusses which connect these together at the top, and is supported by them, forms two concentric polygons, each of 16 sides. They receive a cast iron bed-plate to which the cast-iron shoes for the ribs of the dome are bolted. The latter are 32 in numnumber. They are constructed of two curves of double angle-iron, securely connected together by trellis-work. The requisite steadiness is secured by tie-rods, which brace them both vertically and horizontally. At the top the ribs are bolted to a horizontal ring of wrought and cast-iron, which has a diameter of 20 feet in the clear, and is surmounted by the lantern. Light is communicated to the interior through the lantern, and also in part from the sides, which are pierced for 32 ornamental windows. These are glazed with stained glass, representing the arms of the Union and of its several States, and form no inconsiderable part of the interior decoration.

The external walls of the building are constructed of cast-iron framing and panel-work, into which are inserted the sashes of the windows and ventilators.

At each angle of the building there is an octagonal tower, 8 feet in diameter, and 76 feet in height. These contain winding stairways, which lead to the galleries and are intended for the use of the officers and employees of the Association.

The rapid and unexpected increase of the applications of exhibitors induced the Association to erect a large addition to the building already described. It consists of two parts of one and two stories respectively, and occupies the entire space between the main building and the Reservoir. Its length is 451 feet and 5 inches, and its extreme width is 75 feet. It is designed for the reception of machinery in motion, the cabinets of mining and mineralogy.

The whole quantity of iron employed in the construction amounts to 1,800 tons—of which 300 tons are wrought and 1,500 tons cast-iron. The quantity of glass is 15,000 panes, or 55,000 square feet. The quantity wood used amounts to 75,000 feet.

The engraving on our back page is a view of the interior of the Palace, taken from the West Gallery near the South entrance. The central part, under the Dome, is most prominent. There is an excellent view of the stairways leading from the Nave to the galleries. In front of the galleries are knights in armor, from the Tower of London; they are keeping watch and ward, day and night, over the Crystal and China, a far more respectable occupation than watching Kings and Barons in London Towers. The mail coats, let us observe, give no indication that the men of former days were any larger than those of the present, not a bit, in spite of coffee, tea, and potato hash. The figure of Washington has been improved by the engraver, still the thing has a pudding look about it.

During the past week considerable advancement has been made in opening up new packages and arranging new articles. The American department is beginning to look exceedingly attractive. We are convinced that our countrymen could have filled the whole building with choice works of art and useful machinery.

VISITERS AND RECEIPTS—The number of visiters at the Crystal Palace during the past week, was 6,816 by season tickets, and 16,832 by transcient visitors. The total amount received was $8,420,25. Five dollar tickets can now be obtained to admit the holder until the 1st of October.

Coke a Fuel for Locomotives.

We learn from the "Cumberland Miners' Journal," that the experiments with coke, as a fuel for the passenger engines of the Baltimore and Ohio Railroad, continue highly successful. A few nights since the train for Baltimore was run through from Cumberland with no other fuel, and notwithstanding the detentions by burthen trains, amounting in the aggregate to near an hour, yet the time required by the schedule was easily made. There was not only an abundance of steam, but almost more than the engineer could manage. In fact it is now demonstrated that coke is not only far superior to wood as a fuel for locomotives, but that it can be used at one half the cost. Such, we understand, is the conclusion at which the railroad company have arrived, and accordingly have ordered the employment of coke on all their passenger locomotives as soon as the necessary alterations in the grate bars, &c., can be effected. In the meantime coke has been sent to many of the nothern railroads from this region, with a view of its introduction also in that quarter.

It is evident that a great revolution is about to take place in the fuel employed in the propulsion of locomotives. Coke made from the coal of the Cumberland region, will, in a short time, be substituted for wood on all railroads in the Atlantic States that can obtain the requisite supplies. This we consider as a matter that no longer admits of a doubt.

We would here remark that the experiments with coke on the Baltimore and Ohio road have been made under the direction of Thos. Winans, Esq., one of the directors of the Company, and that to his intelligence and energy is in a great measure due their eminent success.—[Railroad Journal.

[Three years ago the Superintendent of the Hudson River Railroad purchased a large quantity of coke for experimental purposes, in order to try whether or not it could be substituted economically for wood. The experiments were, no doubt, unfavorable to the coke, but that must have been owing to its quality, for this is the very fuel which has been used on all the English locomotives, since the first one "run upon a rail." The superiority of coke as a fuel has long been known, to all those who had given this subject attention. We hope the expectations, expressed in the above extract relative to the introduction of coke on our northern railroads, will soon be realized, for such fuel will cure our railroads of two great evils, smoke and sparks.

Nautical Scientific Convention.

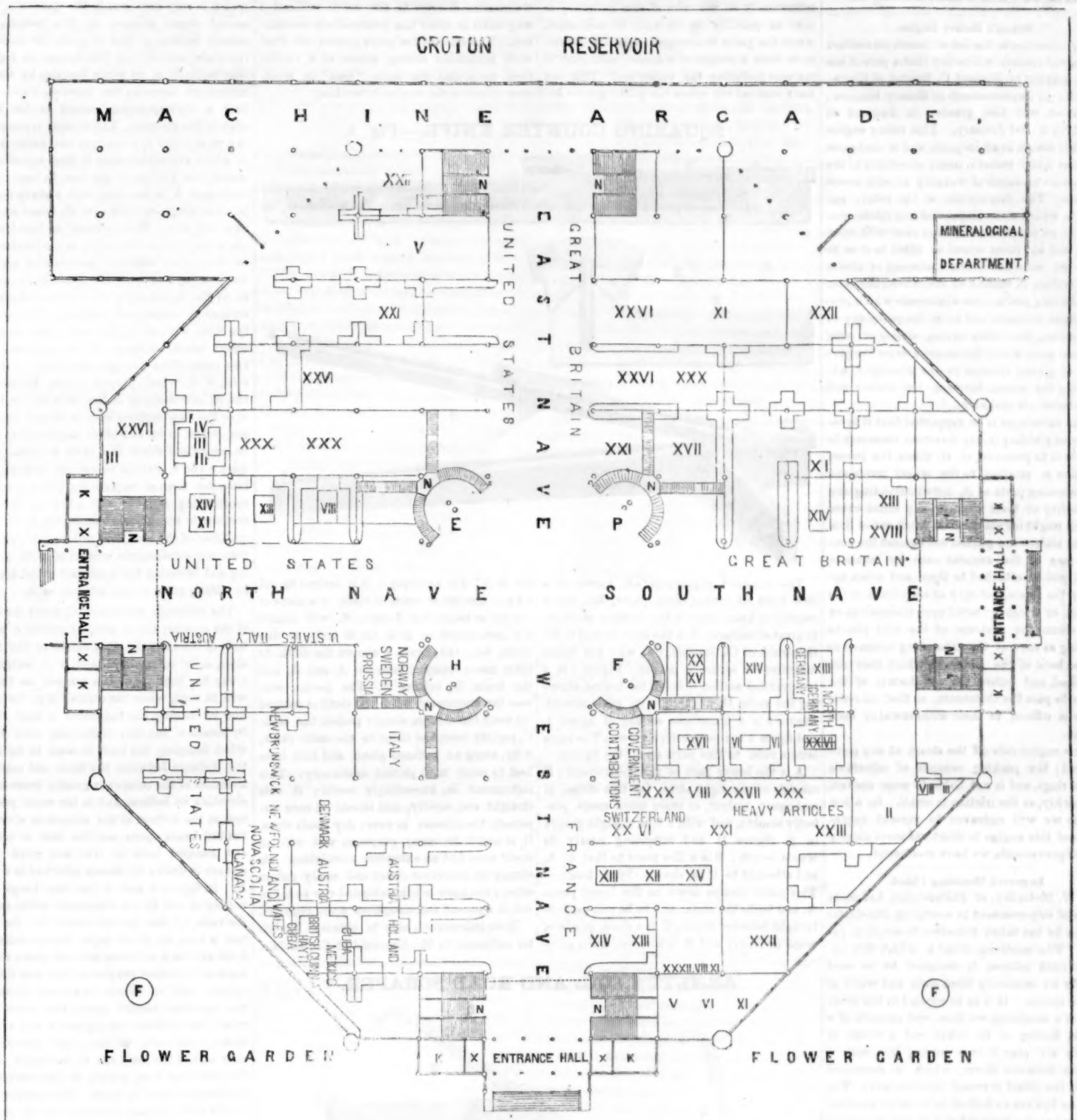
Lieut. Maury sailed for Europe on the 23rd inst., to attend a Convention to be held in the city of Brussels next week. This Convention will be held under the authority of the Naval Powers of Europe, to agree upon some uniform plan of observations, &c., connected with our distinguished countryman's Wind and Current Charts. After the Convention closes, we understand, it is a part of Lieut. Maury's errand abroad to visit the celebrated Observatory at St. Petersburgh for scientific purposes. He goes out under the authority and at the expense of our Government, and we are sincerely glad to see it recognizing the importance of science and a community of interest in scientific objects with the rest of the world by approving and instituting this commission. Lieut. Maury's mission is entirely owing to his genius, his learning, and his life-time of laborious researches in the sciences, and into all the astronomical appliances and meteorological mysteries connected with the navigation of the various oceans, seas, gulfs, &c., of the globe, in different latitudes and longitudes, and at different seasons of the year. The results of his labors have been, and are destined permanently to be among the substantial benefits which genius and science, from time to time, have conferred upon mankind. In many respects this mission is the most honorable and important of any of our numerous missions abroad. His call to Brussels is not only a flattering acknowledgment of Lieut. Maury's superior attainments in the science of navigation, but is a high compliment to our country by the naval powers of Europe.

Before Lieut. Maury left this city a number of our leading merchants, underwriters, and shipmasters, who appreciated his services, made him a present of $5000 and a service of plate. The present is highly creditable to the gentlemen who made it.

The "Illustrated News" for this week contains several beautiful engravings. The "Inauguration Ceremonies of the Crystal Palace" is truly a splendid affair, covering two entire pages of the paper; it surpasses anything of the kind ever issued in a pictorial in this country. "President Pierce Reviewing the Military on the Battery," is full of spirit, lively and grand. The News has already attained a very extensive circulation, and is rapidly gaining in public favor—it deserves the highest praise as a specimen of American art and enterprize. We are indebted to the publisher of the "Illustrated News" for the beautiful engravings of the Crystal Palace which appear in this number. H. D. Beach, publisher, 130 Fulton street, N. Y. Terms $3 per annum.

The "Albany Knickerbocker" quoting our remarks respecting the opening of the Crystal Palace, and the want of respect paid to great inventors, says, and that truly. "Our men of brains—the only aristocracy that a republican people should acknowledge for a moment should meet with more regard. One man like Fulton does more good to the country than all the 'tassel tops' that have existed from Alexander the Great down to Major Molasses."

GROUND PLAN OF THE CRYSTAL PALACE.



EXPLANATORY DIRECTIONS.—Our readers who intend to visit the Crystal Palace will, we believe, find some benefit by attending to our instructions. Examine this ground plan of the Crystal Palace and mark it well. The letters E P H F represent the four principal sections of the building. Letters K and K at the entrances designate the ticket offices, and the letters N the stair near the entrances.—The semi circles near the letters E P H F represent the double staircase under the dome. The numerical letters designate the subdivisions of the four great sections.

SECTION E—Raw Materials and Produce, embracing classess:—1. Minerals, Mining and Metallurgy, and Geological and Mining Plans and Sections. 2. Chemical and Pharmaceutical Products and Processes. 3. Substances used as food. 4. Vegetable and Animal Substances employed in Manufactures.

SECTION P—Machinery for Agricultural Manufacturing, Engineering and other purposes, and Mechanical Inventions illustrative of the agents brought to bear by human ingenuity on natural products; embracing classes:—5. Machines for direct use, including Steam, Hydraulic, and Pnuematic Engines, and Railway and other Carriages. 6. Machinery and tools for Manfacturing purposes. 7. Civil Engineering, Architectural and Building Contrivances. 8. Naval Architecture, Military Engineering, Ordnance, Armor and Accoutrements. 9. Agricultural and Dairy Implements and Machines. 10. Philosophical Instruments, and Products resulting from their use, (*e. g.*, Daguerreotypes, &c.,) Maps and Charts. 10A. Horology. 10B. Surgical Instruments and appliances.

SECTION F—Manufactures—the result of human industry on natural products; embracing classes:—11. Manufactures of Cotton 12. Manufactures of wool. 13. Manufactures of Silk. 14. Manufactures of Flax and Hemp. 15. Mixed Fabrics, Shawls, Vestings, &c.—16. Leather, Furs, and Hair, and their Manufactures. 17. Paper and Stationary, Types, Printing, and Bookbinding. 18. Dyed and Printed Fabrics, shown as such. 19. Tapestry, including Carpets and Floor Cloths, Lace, Embroidery, Trimmings, and Fancy Needlework. 20. Wearing Apparel. 21. Cutlery and Edge Tools. 22. Iron, Brass, Pewter, and General Hardware, including Lamps, Chandeliers, and Kitchen Furniture. 23. Work in Precious Metals and their Imitations, Jewelry, and other Personal Ornaments, Bronzes, and articles of Vertu generally. 24. Glass Manufactures. 25. Porcelain and other like Manufactures. 26. Decorative Furniture and Upholstery, including Papier Mache, Paper Hangings, and Japanned Goods. 27. Manufactures in Marble, Slate, and other Ornamental Stones, Cement. &c., for Construction and Decoration. 28. Manufacture from Animal and Vegetable substances, not woven or Felted, or otherwise specified. 29. Miscellaneous Manufactures and Small Wares, Perfumery, Confectionary, Toys, Texidermy, &c. 30. Musical Instruments.

SECTION H—Class 31.—Fine Arts, Sculpture, Painting, Engravings, &c. An additional class was added to the London list, in consequence of the important branch of industry carried on, especially in this country, in the manufacture of Musical Instruments—a class which will present one of the finest features of the Exhibition.

The railroad cars will take passengers from the lower part of the city at the corner of Chamber street and West Broadway up to the Palace, through the Sixth Avenue, for five cents each. There are also various lines of omnibuses which run from the lower part of the city through Broadway, these carry signs with 'Crystal Palace' on them. Our readers in the country will be 'pleased to recollect this.

The best place of entrance, we believe, is the west side—on the Sixth Avenue. At each entrance there are three passages. one in the middle for season tickets, and one at each side of it for single tickets, where every visiter must pass through a turn-stile. that records his or her entrance—chalks against the ticket receiver and forms a ready reckoner to tell the number of visiters that have passed in at any given time. No bundles are allowed to be carried through the building by visitors, and parasols, umbrellas and canes, are received at the door and placed in a rack by lady attendants, so that by whatsoever door a visitor enters, if he deposits anything with them, he is compelled to depart the same way to regain his property. You now can commence observations, and first walk straight down on the left hand side—slowly—to the central rotunda at H, then cross over to F, and back to N, on the right hand side, then traverse the whole departments in the French, Swiss, and Belgian wing of the building, and the other three quarters in the same manner.

NEW INVENTIONS.

Bristol's Rotary Engine.

By reference to the list of claims on another page, our readers will notice that a patent has been granted to Richard C. Bristol, of Chicago, Ill., for improvements in Rotary Engines; a patent was also granted in England on the 17th of last January. This rotary engine is very simple in all its parts, and it embraces features which remove many objections to the heretofore economical working of such steam motors. The description of the rotary engine to which these improvements relate, consists of an outer fixed annular case with open ends, and an inner wheel so fitted to it as to close its ends and leave a channel or steam way within it, outside of the wheel, the outer case having one or more abutments which project from its inside and fit to the periphery of the wheel, the latter having sliders or wing pistons, upon which the steam acts for the purpose of giving rotation to the wheel, by admitting the steam between the sliders and the abutments spoken of.

The outer case is so supported that it is capable of yielding in any direction necessary to enable it to preserve, at all times, the proper position in relation to the wheel inside and the working parts of it, notwithstanding any inequality of their wear, or any other cause which might induce them to work out of line.

The sliders are pushed out against the concave face of the annular case by means of small pistons attached to them and acted upon by the steam, but only at such times as the sliders, or wings are acted upon themselves by the steam, the pressure of the said pistons ceasing as soon as the exhausting commences at the back of the sliders to which they are attached, and before the withdrawal of the latter to pass the abutments, so that no resistance is offered to their withdrawal or back stroke.

This engine cuts off the steam at any point desired; the packing consists of adjustable metal rings, and is not liable to wear uneven, or quickly, as the friction is small. In a few weeks we will endeavor to present engravings of this engine to illustrate more clearly the improvements we have mentioned.

Improved Mortising Chisel.

I. W. McGaffey, of Philadelphia, has made a useful improvement in mortising chisels, for which he has taken measures to secure a patent. The mortising chisel to which this improvement relates, is designed to be used chiefly for mortising blind slats and work of a like nature. It is to be applied to the mandril of a mortising machine, and consists of a stock, having at its lower end a recess, in which are placed two cutting lips, with a tongue between them, which is depressed when the chisel is raised from the work. The cutting lips are so formed as to cut an aperture or mortise the required size at one operation, and hold the chip or withdraw it from the mortise when the chisel is raised, the chip being forced from between the lips by the tongue, which, when it is depressed, forces the cutting edges of the lips apart and drives out the chip. This invention is a very useful one.

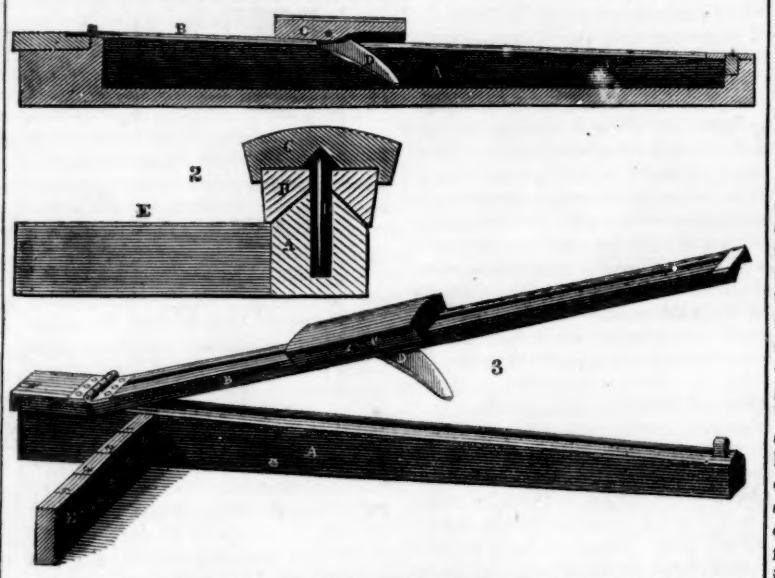
Improved Gas Burner.

An improvement has been made in gas burners by John S. Bowen, of West Chester, Pa. The object of the invention is to construct gas burners in such a manner as to economize the consumption of gas, by reducing the pressure before it reaches the orifices through which it escapes to be consumed. This reduction of pressure is necessary in almost all cases, in consequence of the pressure in the pipes being too great for the economical use of the gas. The nature of the improvement consists in making the burner with a contracted neck, between which and the issue openings there is an expansion chamber, in which, if the opening of the neck is properly proportioned to the issue orifices, the gas will expand to a suitably reduced density before it issues at the point of ignition. Measures have been taken to secure a patent.

New Valve Motion for Oscillating Engines.

William Stephens, of Pittston, Pa., has taken measures to secure a patent for an improvement in the slide valve motion of oscillating steam engines. The steam ports and valve are arranged so that the latter works transversely on one side of the cylinder, as near as possible to its axis of oscillation, while the guide is arranged in such a manner as to form a portion of a screw, concentric to the axis including the valve rod. This rod has a stud which enters the guide groove and transmits motion to the valve as the cylinder oscillates. By this arrangement motion is transmitted directly to the valve without a way-shaft or other like intermediate mechanism. The sides of the guide groove are fitted with adjustable sliding pieces of a certain form for giving the valve "lead" in whatever direction the engine is working.

SQUARING COUNTER KNIFE.---Fig. 1.

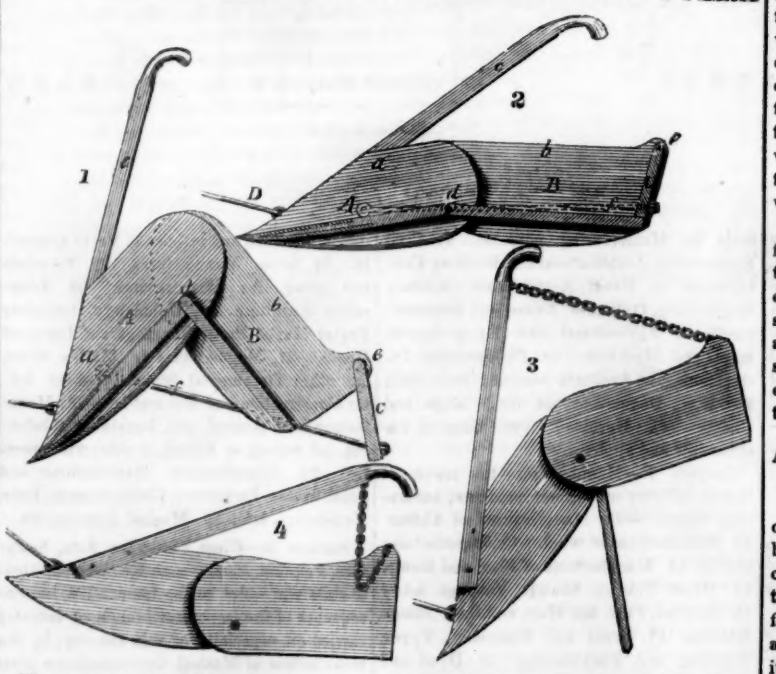


The annexed engravings are views of a new knife for cutting cloth, paper, &c., and is capable of being used on the counters of stores, to great advantage. It is the invention of G.W. Griswold, of Carbondale, Pa., who has taken measures to secure a patent. Figure 1 is a longitudinal section through the centre, showing the knife, D, working in its guide groove. Figure 2 is a transverse section of figure 1, and figure 3 is a perspective view. The same letters refer to like parts on all the figures.

A is the lower part of this instrument; it consists of one light strip, (or two strips) of mahogany, walnut, or other wood made perfectly smooth, and with a true straight groove in it (figure 1) and extending nearly its whole length; B is a like piece to that of A, and attached to it as shown, by a hinge.—This piece clamps down on the lower piece, A, and holds the cloth, &c., to be cut, perfectly tight between them; C is a slide, (made of wood or ivory) and D is a curved knife secured to it. For example, if it is desired to cut off any number of yards of cloth, or a piece of leather or paper, the T-arm, E, will square the instrument so as to lay it truly on the cloth, &c., and figure 1 shows the cloth or other fabric clamped between A and B, and the knife, D, cutting it. The person who uses the instrument when the cloth is secured between the clamps, simply pushes the slide, C, rapidly from the hinge to the outer extremity, along an inclined plane, and cuts from heel to point with perfect uniformity. This instrument is exceedingly useful; it cuts straight and rapidly, and should at once supersede the scissors in every dry goods store. It is useful for many purposes, and will no doubt soon find an extensive circulation. Its simplicity renders it cheap and easily put in order; the knife is adjustable and can be taken out in a second and sharpened when required.

More information may be obtained by letter addressed to Mr. Griswold at Carbondale.

ARNETT'S SOIL AND ROAD SCRAPER.



The annexed engravings are views of a new road scraper invented by William D. Arnett, formerly of Fairfield, Iowa, but now residing in this city, who has taken measures to secure a patent for the same. The figures represent two modifications of the scraper, figure 1 shows a scraper with side rods in the act of dumping, and figure 2 is a side view of the same in the act of scraping. Figure 3 is a view of the scraper without the side rods, and with the bottom secured at the middle, and figure 4 is a side view of the same in the act of scraping.

The improvement consists in constructing a road scraper in two parts, which are united so as to form a joint at or near the middle of its length, the object of which is, first, to enable the operator to dump the load equally in the front and rear of the scraper by elevating the middle thereof, instead of turning the scraper over or upward upon its front end, as is the case with the ordinary scrapers in use, which is very laborious to the operator. The second object attained by this feature, the jointed bottom, is that it gives the operator complete control over the scraper in regulating its depth of cut while loading, by simply raising and lowering the handles, which impart a corresponding motion to the front edge of the scraper. The scraper represented in figures 1 and 2, is made in two parts, A and B, which are united so as to form a joint upon which the two parts are free to turn. The front part, A, is provided with a sharp metallic shoe which extends over its upper as well as under side. Each section of the bottom has sides *a a* and *b b*, to the first of which the handles, *c*, are attached, and extend upward and rearward at a suitable angle to be grasped by the operator, by which he controls the scraper in loading and dumping. The ends of the sides, *a a* and *b b*, lap each other so as to afford lateral stiffness to the scraper. The two parts of the scraper are united by strong rods, *d d*, which project from the bottom and fit into bearings in the ends of the sides, *a*, or the two sections may be united by hinges, straps, or in any other manner that will be secure and allow the parts to turn. The sides *a* and *b*, extend below the bottom and have the form of rockers for the purpose of constituting runners, and allowing the two sections to accomodate themselves to the inequalities of the road, and relieve the operator from any considerable amount of labor in raising and lowering the front part of the scraper in cutting more or less into the earth.

The automatic tail-board, C, forms the back of the scraper, and is hung by pivots, *e*, to the ends of the sides, *b*. It is united to the front sides, *a*, by connecting rods, *f f*, extending along the outsides of the scraper, so that it will be seen, when the scraper is in the position for lodging, the tail-board is kept closed by means of the said connecting rods, *f*, and when dumping the load as seen in figure 1, the distance between the front and rear extremities of the scraper is greatly lessened, by elevating its bottom, and in the same proportion as the bottom of the scraper is elevated, the tail-board opens and the load is divided and dumped both in rear and front. The scraper is drawn by horses attached to a bale, D. In figures 3 and 4 the side hinge rods uniting A and B, are dispensed with, so are the rods, *f f*, and the tail board, C; the bottom is hung on pivot joints which unite the front and back sections, and the chain shown answers the same purpose of the side rods in figures 1 and 2. When the scraper is loaded the operator merely raises the arms, *c c*, when the bottoms in figures 3 and 4 drop down, one half of the load drops, and only half of the load has to be tipped over; this the team does, owing to the position of the scraper point or shoe. The scraper from which this diagram was taken is on exhibition at the Crystal Palace, where all are invited to see it.

The inventor informs us that it is much easier for the animals to work this machine than the old one, and that he can perform nearly double the amount of work with it in the same time. We believe that Mr. Arnett is about to commence the manufacture of these scrapers in this city, and further information can be obtained by letter addressed to him in this place.

American Association for the Advancement of Science.

This Association met at Cleveland, Ohio, on the 28th inst., President Pierce, of Cambridge, Mass., in the chair. Prof. Agassiz could not attend on account of sickness, contracted during his recent tour of exploration for scientific purposes, among the swamps and low waters of the South and West. As it is two years since the Association met, a very great number of papers have been presented and read. At some future time we will endeavor to present the substance of some of them.

We understand that a new factory has been built at Cohoes, N. Y., where the manufacture of *flax cotton* goods has been carried on for some time, by a discovery of Neil Cook, an excellent chemist.

Scientific American

NEW-YORK, AUGUST 6, 1853.

New Improvement—Splendid Prizes.

We have every reason to be grateful to the numerous readers of the "Scientific American" for the very liberal manner in which we have been sustained in our enterprize. In the management of an independent journal, it is impossible to avoid collisions with the interests and feelings of many. It would be pleasant to sail at all times in smooth water, under a clear sky; and having no particular love for the angry elements of strife, we would, as a matter of personal feeling, claim immunity from all opposition. If, however, we do our duty to those who have a right to expect it of us, we must be fearless in discussing all prominent subjects—theories and speculations—which present themselves within our legitimate sphere; and our readers will, we doubt not, readily grant that we are not very timid in this respect. Frank and open opposition, if any, is what we admire; if ever we err in the selection of terms whereby to make our position understood, we do it in the fullness of our zeal to protect our readers and to avoid being *misunderstood*.

Whoever has carefully read the "Scientific American" for the past seven years, will not fail to discover that about every twelve months some prominent subject connected with the arts and sciences, springs up in such a shape as to attract very general attention,—and the more specious the greater the excitement; we need not furnish an example, many are to be found in the back volumes of this journal. We leave our readers to determine whether our position respecting them has been well chosen, or whether, as has been charged, our statements have been made up of false issues.

We can conceive of no duty more onerous and embarrassing than to be obliged to place ourselves in a position of seeming hostility to inventors; but the interests of the public should never be lost sight of by public journalists, though individuals may suffer thereby a temporary or permanent injury. The propagator of false and unreliable views, is, in the end the greatest sufferer; a system of reasoning based upon false theories and calculations, would very soon result in the destruction of any public journal. We are at all times willing to bear the responsibility of whatever statements we publish to the world as our own; if convinced of error we are prepared at all times to acknowledge it cheerfully—no other arguments but stern facts can drive us from an honest conviction; if we have not earned this character, after eight years' trial, we never expect to. When our views are correct we can well afford to bear the anathemas of hired scribblers, or of open or concealed enemies, well knowing that time will be our justifier.

Commencing the Ninth Volume of our journal, the first number of which will be issued on the 17th of September, we cannot forget the friends who have so liberally sustained us. We are not ungrateful, and we shall strive, by the aid of the best practical talent within our reach, to render the "Scientific American" more and more worthy of public confidence.

Our present able editorial force will be increased; new and beautiful type will be used, and the paper will be greatly increased in weight and quality—this alone will augment our yearly expenses over $3000. It is our intention not only to present a useful but also a beautiful paper, unexceptionable in its mechanical appearance.

To the press generally we owe many obligations for kind and complimentary notices, the approbation of a free and independent press is an object worthy of the highest consideration. Without this powerful co-operating influence we should not have succeeded as we have, in obtaining a weekly circulation of eighteen thousand copies.

Hoping to stimulate our readers to greater activity in spreading the circulation of the Scientific American, we offer the following splendid prizes for the largest list of subscribers sent in by the first of January next:—

$100 will be given for the largest list; $75 for the second; $50 for the third; $45 for the fourth; $40 for the 5th. $35 for the 6th; $30 for the 7th; $25 for the 8th; $20 for the 9th; $15 for the 10th; $10 for the 11th; and $5 for the 12th. The cash will be paid to the order of the successful competitor, immediately after January 1st, 1854.

These prizes are worthy of an honorable and energetic competition, and we hope our readers will not let an opportunity so favorable pass without attention.

Government Steamships—The Princeton.

If what everybody says is true, then our government has a most wretched and inefficient steam navy. Experience does not seem to be held in much esteem by some of those who have had, and still have the management of navy matters, for the newest steamships are worse than the oldest in the navy. In 1843 the first screw propeller steam frigate was designed by Capt. John Ericsson, of caloric notoriety, and the machinery was constructed by Merrick & Town, of Philadelphia. After six years moderate service, and the destruction of two sets of boilers and two propellers, her hull, which was built of green white oak, was found to be rotten, and was ordered to be broken up. The engines, however, although of queer construction, viz., double pistons of unequal size, working in semi-cylinders, were said to have operated well, and were still nearly as good as new, consequently they were taken out and kept in the navy yard at Boston, with the intention of putting them in "Princeton the Second." This new vessel was constructed in the Boston Navy Yard—the hull said to be built after a beautiful model and of the best materials—and was launched in 1851. The engines were carefully re-lined and placed in the vessel, and new boilers and a new screw from designs by Engineer Isherwood, U. S. N., were completed by Murray and Hazlehurst, of Baltimore.—The cost for boilers, repairs on engines, &c., and for new screw was $86,293. It was intended that this new steam frigate, armed and equipped, would form one of the steamers for the Japan expedition, but instead of this, in about two years after she was launched (how long they take to tinker up government jobs,) she was recently sent down to the Fishing Banks, in the Bay of Fundy, and on her voyage from Norfolk, Va., to Portsmouth, N. H., she obtained the crab-like speed of only four miles per hour. B. F. Isherwood, Engineer in Chief U. S. N., in a communication to the National Intelligencer, gives as a reason why she made such lobster speed, "that one boiler was disabled and thrown out of use by the blistering of the tops of the furnaces, and the trip was made with greatly reduced power, the two remaining boilers only being used," and he affirms that when it is repaired, she will give satisfaction. We hope so for the sake of our Navy Engineers. A number of them we know are men of scientific and practical ability, and there must be something wrong in the navy system, or else there would not be so much bungling work, either in the construction or designing of government machinery and boilers. The "Philadelphia Gazette" asserts that this Princeton the Second has already had two sets of boilers, the first by Engineer Isherwood having proved worthless; of this, however, we have no knowledge, only it must be confessed that the failure of the Princeton on her trip to Portsmouth, is humiliating to us, who take such pride in the engineering genius and skill of our country. We sincerely hope that D. B. Martin, an excellent engineer, who has been sent to see what is the matter with the Princeton, will be able to repair all defects, and enable her to proceed to the protection of our mackerel and cod fishermen, but to do so she must show a cleaner pair of heels than waddling along at the rate of either four or six knots per hour.

Truth about Inventions—Steam Generators.

A respectable periodical in Ohio abuses us shamefully because we pointed out on page 331, the old and unscientific character of a steam generator, which some of the Cincinnati papers spoke of as something new, wonderful, and useful It was described as constructed on the principle of "heating water instantaneously into steam—the amount of cold water equal to the amount of steam required being injected into hot generators at every stroke, thus doing away with the necessity of boilers." The public will thank us for such information, no matter what ignorant or interested men may say. McCurdy's steam generator, patented in 1834, was constructed on this principle, and although it made a great noise for some time, it proved an utter failure. Dr. Alban's steam generator patented in 1825, was also constructed upon the same principle, but was different in form from that of McCurdy's, it also was a failure, and any steam generator will fail if constructed on the principle of ejecting the cold water on hot plates, wire gauze, &c., to save boiler room. Those who are acquainted with the nature of steam, in its spheroidal state, &c., know the reason. We welcome every new and useful invention, and are the friends of improvement, but a person who palms off an old useless invention for something *new* and *useful*, is an enemy to the progress of invention, and he who publishes untruths about unscientific schemes from personal motives, does great injury to honest inventors, those who really have invented something useful. Why? because the man of capital who might otherwise buy a good and useful invention, and introduce it for the benefit of the community, if deceived once by false representations, naturally becomes suspicious of all new inventions, good and bad. For the interests of inventors themselves—those who have useful inventions—and from the pleasure we derive in the progress of the arts, we conceive it to be our duty to speak the truth at all times respecting alleged inventions brought to our notice.

Pegging Boots and Shoes by Machinery.

We have now before us a pair of shoes which were pegged by a machine; they are the first and only pair we have seen that were not pegged by a son of St. Crispin with his awl and hammer. The work is well done, as good as any hand work we ever saw.—the machine which accomplished this feat was invented by Seth D. Tripp, patented on the 12th of last April, and assigned to Edward L. Norfolk, of Salem, Mass., the sole proprietor. We have learned that this machine will peg a No. 7 boot or shoe in half a minute, or 30 pairs in one hour, if the shoes could be put in and taken out in the same time they are pegged. It can be altered to suit a different sized shoe or boot in two minutes, and it will peg any shape.

As the price of boots and shoes has greatly advanced within the past two months, and owing to the vast number of pegged boots and shoes made in our country, all by hand, the importance of a machine to accomplish the same object, is apparent to every person. In a single town of Massachusetts, (Lynn) no less than 10,486 persons are employed in the 155 shoe factories there. The yearly value of women's and children's boots, shoes and gaiters made there, is $3,421,300. This is not all pegged work, nor have we the statistics of the amount of pegged boots and shoes, manufactured annually (when will the census be printed—oh how slow Uncle Sam is about such things!) but some idea can be formed by our readers from the foregoing statistics, of the magnitude of the *feet clothing* manufacture of our country. All attempts by our countrymen to establish the pegged boot trade in Britain have signally failed, although a great expense was incurred to try to establish it, we have been informed, Uncle John and Cousin Sandy still cling to *hob nails, tackets*, and stitched work in preference to pegs and cheaper brogans.

We have not seen the machine operate, nor do we know how much it will cost to make one, neither can we tell the relative economy between it and hand labor, we have only seen the drawings contained in the patent, and examined the pair of shoes made by it, to which we refer. It seldom happens that any new machine, invented to perform totally new operations, is perfect, or anything like it, but generally it embraces a principal feature—which, when secured by patent, prevents those who may make future improvements, from using them without the consent of the original patentee. We understand that the patent rights for all the States except New York, Pennsylvania, and New England, are yet for sale, but cannot tell anything about the price of rights; such information can no doubt be obtained by letter addressed to Mr. Norfolk, the owner of the patent.

Ocean Telegraph.

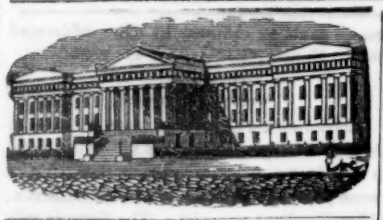
Endeavors are now being made in London to form a telegraph company for laying down a line in the Atlantic between Ireland and some point on the coast of North America, (Newfoundland no doubt). The distance will be about 1,700 miles of submarine cable.—The estimates made of expense are from $1.500,000 to 3,000,000. We hope this great scheme will be carried out, then we shall be able to communicate from New York to London in a few minutes, and the running and racing of steamships and locomotives, to bring early news, will become obsolete. The possibility of sending messages by electricity around the whole circumference of the earth, has never been disputed on any theoretical deductions; in fact, those possessing electrical knowledge have been looking forward to a greater feat in sending messages by electricity through great bodies of water, viz., without laying down any line of wire at all. More than one electrician has been working on this problem for a number of years. Messages can be sent through streams of water without a wire; and messages have been sent through the Thames river, and though a portion of the waters of New York Bay without a wire being laid through the water. The time may yet arrive when without laying down any wire cables, telegraph messages may be sent through straits of seas, through lakes and rivers, the waters acting the part of conductors; pure fresh water, however, never can be used for this purpose, as it is a bad conductor.

The English have rather stolen a march upon us in the laying down and successful working of long submarine lines, and now this project is the grandest scheme yet proposed for uniting America commercially with Europe. The idea is not new, the scheme is not new, the credit to be given will be to those who have faith to believe in its success, the means to invest in, and the courage and perseverence to execute the plan. The line can be laid, for the sea has a bottom as well as Dover Straits, where one has been laid for some time; the only difficulty will be in the successful working of the line—its economy. We could not help being suprised at the ignorance manifested last week by one of our daily papers, while speaking of submarine telegraph lines. It said, "the connection between England and France was in fact as doubtful before verified success, as the project of tracing the equator with wires. The nose of John Bull was vertical when in August 1850, the first attempt was made, and when it failed, John Bull laughed unsparingly."—Now, as we understand it, John Bull must have been laughing at himself, for he was the fellow who laid down that cable. The simple fact is, that when a wire laid down in the Hudson, and the wire in the English channel failed at one time to convey messages satisfactorily, the obstacle was understood by men of science not to be an impractical one in theory. Mechanical difficulties cannot all be seen at once, but they can in the course of time, and they are not impossibilities. Ignorant men are the very persons to decry obscure but novel scientific schemes, while at the same time they are the most easily seduced to boast and brag of unscientific and impracticable schemes.

Events of the Week.

Extension of a Patent.—Leonard Smith, formerly of Plattsburgh, now of Troy, N. Y., has petitioned for an extension of his patent, which was granted on the 18th of October, 1839, for an improvement in smut machines. The petition will be heard at the Patent Office on the 3rd of October next, at 12 M.—Those who have objections to the extension of said patent must file them in writing twenty days before the day of hearing. All testimony must be taken before a proper magistrate, and transmitted according to the rules of the office.

Variegated black marble is found on the White River, Arkansas, which is said to be equal to the Egyptian.



Reported Officially for the Scientific American.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 26, 1853

SHOWER BATH TABLES—By CYRUS C. Bisbee, of Rochester, N. Y: I claim the combination of the upper and lower tray as described, so that they shall simultaneously recede from each other to elevate the water and set up the bath and approach each other to pack away the bath and convert the apparatus into a table.

ROTARY STEAM ENGINES—By R. C. Bristol, of Chicago, Ill.: I claim the combination and arrangement of the outward radiating pistons or their equivalents, with their sliders, steam-ways, or passages and abutments, in such manner that the sliders are free from lateral friction by pressure of the propelling medium in passing the abutments, and are worked outwards and kept up to their bearing by the pistons, as specified, whereby promptness and certainty is insured in the outward action of the sliders, counteracting pressure to their inward radiation removed, and a tight but free action of the sliders through their entire travel, produced as set forth.

[See a description of this invention in another column of this paper.]

PLOWS—By Wm. V. Burton, of Orange, Ohio: I claim the manner of securing the points of the land side, land cutter, and counter side, by the lock couplings or joint formed in the mortise by the curvature of the land cutter, as set forth.

Second, I claim the plow-point, and a reversible land-side piece, in the manner specified, whereby the land side piece and point is made reversible.

MILLS FOR GRINDING APPLES—By F. B. Hunt, of Westfield, Ind.: I do not claim the employment of the endless belts, irrespective of their arrangement, as they have been long used, neither do I claim the cutters nor cylinder press separately.

But I claim, first, the employment or use of the endless belts, arranged as described, viz., the upper belt, having an adjustable roller, which, upon being elevated or depressed, causes the belts at the discharge ends to be brought nearer together or separated farther apart, thus allowing the belts to be adjusted to feed or convey to the cutter all the different articles or substances which at present require each a separate and distinct machine.

Second, I claim, in combination with the two endless belts arranged as described, one or more cutters or cutting cylinders, said cylinders being placed loosely on their axes, and secured by set screws, as described, by which several forms of cutters may be used, according to the work required to be performed.

[See notice of this invention on page 12, Vol. 8, Sci. Am.]

PROCESSES FOR MAKING GLUE—By D. A. James, of Cincinnati, Ohio: I claim, first, the method described, of the preservation and conversion into glue of the tanners scraps, &c., by open piling successive layers of scrap coated by cream of lime (in place of the lime steeping heretofore resorted to) followed by the application of sulphuric or other suitable acid, which, combining with the lime, prevents its deleterious action on the glue, and supersedes the necessity of the atmospheric exposure now resorted to.

Second, the combination with the said previous treatment the process, as described, of making glue by means of the combination of direct or indirect steam acting in concert or separately, according to the stage of the process and the relative heat and moisture required, avoiding on the one hand the injurious scorching effects of the open furnace, and on the other hand the serious inconvenience of undue dilution by the open steam jet

LAMPS—By Owen Redmond, of Rochester, N. Y.: I claim resting the oil fountain upon a spring or springs, so constructed as to retain the surface of the oil in the fountain constantly at or nearly uniform height, and this I claim whether used with or without a float, as set forth.

SEED PLANTERS—By Milton Satterlie, of Louisa, Ill.: I claim the arrangement of the drill and covering wheels, or their equivalents, on flexible axles, so that the said wheels or their substitute will rise and fall to accommodate themselves to undulating ground, whereby the grain in all the furrows, is planted at an equal depth and equally covered, as specified.

RAILROAD CAR SEATS—By Wm. M. Warren, of Watertown, Ct.: I do not claim a rotating seat.

I claim attaching the hinged or adjustable back to the stationary back, by means of the hinges, and having a jointed or metal strip secured to the adjustable back and to the cross-piece, the hinge or joint of the metal strip being above the line of the hinges, by which arrangement the seat is inclined or brought to a horizontal position, as the adjustable back is raised or depressed, as described.

See description of this invention on page 104, Vol. 8, Sci. Am.]

BRAN DUSTERS—By EZRA E. Benton, of Milwaukie, Wis.: A bran duster patented Feb. 27, 1849, having a fan with oblique wings, is employed at the top of the machine for producing a draught of air into the same, and a fan with wings parallel with the axis of the cylinder, is employed at the bottom of the machine into a lateral opening in the side of the same. This I do not claim.

I do claim the combination of the two inwardly acting draughts of air of different degrees of strength produced by the oblique fans, when their forces are proportioned in such a manner that the upper blast will feed the bran into the machine and drive the flour through the sieve, while the lower current only counteracts the downward pressure of the upper blast so as to prevent any flour falling to and being discharged with the bran at the aperture in the bottom of the duster, as described.

CORN PLANTERS—By Jacob H. Carothers, of Davidsburgh, Pa.: I claim the method of stopping the seeding apparatus by grappling the periphery of the driving wheel, as described.

BEE HIVES—By Sylvester Davis, of Claremont, N H: I claim the manner of constructing the float of two parallel series of lightly separated thin slats placed one directly over the other, and separated by two or three cross slats, and supported by similar cross slats beneath the whole for the purpose of allowing the bees to feed without being liable to be mired in the food beneath.

SMUT MACHINES—By Ziba Durkee, of Alden, N.Y.: I claim the covering of the revolving cylinder, wings, or beaters of smut machines with wire netting or cloth, for the purpose of providing an uneven but smooth beating or rubbing surface, and at the same time give great durability to the said parts, as described.

OMNIBUS LANTERNS—By F. O. Deschamps, of Philadelphia, Ohio: I claim constructing the case of the lamp, in the manner described, viz., the lower part of the case being constructed of glass, and the upper part of the metal having a lens inserted in it, by which construction the lamp, when placed as shown, is made to illuminate the interior of the omnibus or stage, and also to afford light on the top or roof of the omnibus or stage to enable the driver to see distinctly what money or ticket he may receive and to facilitate him in giving change.

[For a description of this invention see page 180, Vol. 8, Sci. Am.]

COVERING THE BACKS OF BOOKS—By J. A. Elder, of Westbrook, Me.: I claim, first, hanging the frame carrying the pressure roller upon and eccentrically to the center of motion of the arms, so that the center of motion of the frame can be raised at pleasure as described.

Second, the combination of the wedge and bars, when connected with the jaws of the clamps, as described, for the purpose of keeping the center of the book, whatever its thickness, vertical with the bearings of the swinging frame, as described.

DYEING YARN PARTI-COLORED—By D. B. Hinman, of Philadelphia, Pa.: I claim the employment of a series of separate and adjustable or changeable bars, one above the other, in an adjustable press, and pressing between their faces the parts of the yarn not intended to be dyed while the liquor is in contact with them, and dyes the parts of the yarn between the sides of the bars, as described.

PLOTTING THEODOLYTE—By Levi Pitnam, of Tonisbrook, Va: I claim the adjustable index, or its equivalent, in combination with the graduated scale upon the traversing ruler and the horizontal dial, as described.

I do not claim a rotating draughting board turning upon a fixed center-pin in a protracting arch with a traversing ruler working upon two graduated parallel guide strips. But I claim a dial fixed upon a staff or socket, in combination with the revolving frame, turning under said dial on the socket, and carrying the traversing ruler, and a suitable sight vane constructed and operating as described.

STRAINING SAWS BY COMPRESSED AIR—By J. A. Rapp & E. S. Wright, of Buffalo, N. Y.: We claim the application of compressed air to the straining cylinders of saws, when said cylinders are so connected with each other that the compressed air shall alternately pass from one cylinder to the other during the reciprocating action of the saw and combined with the air pump and pressure valve, for the purpose of regulating and maintaining the intensity of the steam on the saw, as described.

DYEING COMPOUNDS—By F. G. Vetterake, of New York, N. Y.: I claim the making of the alkali compound, substantially as set forth, as a basis for a blue dye.

PRESERVING INDIA RUBBER IN THE LIQUID STATE—By H. L. Novis (assignor to S. T. Armstrong), of New York City. Patented in England Feb. 24, 1853; and in France March 13, 1853: I claim the compound, consisting of the native juice of the caoutchouc, with aqua ammonia or the equivalent thereof, as set forth, when said ammonia or its equivalent is mixed with said juice of the caoutchouc in a liquid state, by means of which the juice above named is preserved for a great length of time, and can be manufactured at less expense than the india rubber of commerce which is mixed with other foreign substances.

And I also claim the solid elastic article when manufactured from the said composition of matter, as described.

RE-ISSUES.

COMPOSITION FOR STEREOTYPE PLATES—By Leonardo Westbrook, of New York City: (assignor to Josiah Warren, of Posey, Ind) Patented April 25, 1846: I claim, first, the mixture, as described, of shellac, tar, and sand, as a substitute for type metal.

Second, I claim the use of shellac, as a basis to form a substitute for type metal, when it is mixed with the substances I have mentioned, or with other substances of a similar nature.

Third, I claim also the use of clay, mixed with sand in various proportions, also with gum arabic, beeswax, stearine, tallow, and wax, as described for the purpose of engraving or forming matrices or moulds in which to make casts for typographical purposes, of the material and in the manner as set forth.

Fourth, I claim, also, the use of clay as a basis, from which to form matrices or moulds, as aforesaid, whether it be mixed with the materials, I have mentioned or whether other substances be used instead of them, but of the same nature.

Fifth, I claim, in combination with the employment of plastic material for stereotyping the employment of the bearers in the manner described, for the purpose of obtaining casts exactly level, and of type height.

DESIGNS.

SEWING BIRD—By J. E. Merriman, of Meriden, Ct.

PARLOR STOVE—By Elihu Smith, of Albany, N.Y.

STOVE—By H. H. Huntley (assignor to D. F. Goodhue), of Cincinnati, Ohio: two designs.

COOKING STOVE—By Thomas Barry, of New York, N. Y (assignor to North, Chase & North), of Philadelphia, Pa.: two designs.

An Extraordinary Discovery.

The attention of men of science in Paris, has been drawn to an extraordinary discovery made in a neighboring department. A gravedigger, in throwing up some earth, came upon a body in a state of perfect preservation. On examination it proved to be that of an individual buried thirty-seven years ago. He had died from the effects of the bite of a mad dog. The shroud and the coffin had fallen to dust, but the body remained intact. This is the third exhumation made within twenty years, of the victims of hydrophobia, under similar circumstances; and it would really seem that they are beyond the reach of decomposition. The registry of deaths was consulted and no mention of the embalment of the body was found.—Ex.

[We do not believe this story, unless the deceased had been treated with arsenic to cure the disease.

Sewing Machines.

MESSRS. EDITORS—I first purchased for the Western District of Tennessee the "Lerow & Blodgett" sewing machine; I then purchased E. How, Jr., & Co.'s, for the same territory; I then found Singer's machine, and Wilson & Co.'s machine, and a host of another sort. Now the last is Milller & Co.'s, of St. Louis, Mo., which has been sold for the same territory. How is this? Why do they at the Patent Office issue rights for so many of the same kind? Innocent purchasers are swindled out of their money by so many base counterfeits, frauds, impositions, and infringements—food for lawyers at the expense of credulous and unsuspecting citizens. Please let me hear from you. N. POTTS.

Memphis, Tenn., July 25, 1853.

[Credulous, unsuspecting citizens—not the Patent Office—are the very persons to blame for affording food for the lawyers, and Mr. Potts is an example of this kind. He should not be so ignorant of patent rights as he evidently is, if he is going to deal in them. The Patent Office has never issued two patents for the same improvements on sewing machines, and Mr. P. should never have purchased a machine without examining the patent and fully understanding the claims. If any man is "defrauded," as he calls it, by a patented machine, without having examined the patent, who is to blame but himself? The Patent Office grants patents for improvements, and every patent issued must have a claim different from any other. The Patent Office never issued rights (as asserted by Mr. Potts) for so many machines of the *same kind*; there is something specifically different in each. One indeed may be a simple improvement on the first sewing machine patented by E. Howe, Jr., and embrace the principle claimed in his patent; the buyer of no patent should purchase until he has satisfied himself that he has a clear title deed from the seller. How would Mr. Potts act in reference to the purchase of a house, lot, or farm? Would he not examine into the right and title of the property before he paid his money? Certainly he would. Why then does he blame the Patent Office, for his own neglect in reference to the property of patents in sewing machines? He should have examined the Patent Office records, and seen what patents already existed, and in what they consisted, before purchasing at all.

Thunder and Lightning.

MESSRS. EDITORS—In your article in No. 45, on this subject, you say you "have come to the conclusion that for one vertical flash of lightning that reaches the earth, fifty are horizontal—dissipating in the atmosphere like the fibres of a vine spreading out from the main trunk."

I think you are correct in your conclusion; the dissipation takes place in the lower cloud surface. I have witnessed the same thing when sailing above the lower layer of clouds during thunder storms. In rain storms there are always two layers of clouds, and the heaviest discharges of electricity take place when the rain or hail falls the fastest, from the upper through the lower cloud. Now when the rain falls moderately, and the lower cloud is dense and unbroken, the electricity carried down by the drops is silently absorbed by the cloud vapor below, but when the rain falls in torrents, and the lower cloud, through which it has to fall, is not very dense, and is withal detached or broken, then violent discharges ensue, generally in horizontal directions, and when intensely heavy, they will occasionally be driven entirely through the lower cloud, obliquely downwards, rending whatever intercepts them, and igniting combustible substances.

Were there no lower cloud for the rain to fall through, the earth would receive a shower of fire with the rain drops, as they come in contact with it, during sudden heavy rains.

The reason we seldom have electrical dischorges in winter during settled rains, is found in the slow and gradual formation of the storm, thereby forming a complete and dense lower cloud, sufficient to absorb all the rain-descending electricity as fast as it touches it, without explosion. JOHN WISE.

Lancaster, Pa., July 27, 1853.

[The above is from Mr. Wise, the celebrated aerial navigator of nearly two hundred atmospheric voyages. He has paid much attention to atmospheric phenomena, in his aerial voyages, and whatever he says on the subject is worthy of much attention.

Hobbs Picking Another English Lock.

Until the year of the Great Exhibition nobody had succeeded in obtaining the 200 guineas offered by Messrs. Bramah to any person who could pick their celebrated lock. This piece of mechanical ingenuity was at last performed by Mr. Hobbs, who was not a lock maker, but a lock picker; since then the art of picking locks has become somewhat elevated, and has attracted the attention of several first rate English engineers. The Society of Arts, in John street, London, desirous of promoting the skill of English locksmiths, issued a circular last year for premiums on various articles of manufactures, among which was one for the invention of a good lock, combining strength and great security from fraudulent attempts, cheapness, freedom from disarrangement by dirt, and requiring only a small key. The conditions upon which the prize of £10 was to be awarded seem to be somewhat inconsistent with the object required; but nevertheless the offer commanded attention, and the successful competitor was Mr. Saxley, of Sheerness; and to him the prize was awarded by the committee, the chairman being Mr. Chubb, the lock maker, in St. Paul's churchyard. By a letter from Mr. Hobbs, which appears in the "Journal of the Society of Arts" of the 24th of June, we find that Mr. Hobb's curiosity, which was only equalled by his modesty in not competing for the prize, induced him to inspect this piece of mechanism which the committe, presided over by Mr. Chubb, had pronounced to be one most in accordance with the prescribed rules of the society; when so far from its possessing that great security required, he discovered that it was constructed on the principle of the Yale lock, such as are manufactured by Mr. Cotterill, of Birmingham, England, and to prove to the persons present that it possessed no security, Mr. Hobbs took a small straight iron wire from his pocket, and with a thin strip of steel opened it in the presence of several members of the society in three minutes.

Manufacture of Lime.

The "Wisconsin" gives a description of some lime kilns, recently erected at Milwaukee by Mr. P. C. Hale:—

He has in operation one kiln, 16 by 20 feet in size, and 12 feet high, with an arched roof of brick, containing seven chimneys, and another kiln, nearly completed, much larger than the first, in which he can manufacture 600 barrels of lime per week, and is prepared to increase the number of kilns as fast as business demands. These kilns are so constructed that nearly an equal amount of heat is thrown upon each stone at the same time. In consequence of the arch no cold air reaches the top stones, and the whole contents of the kiln are equally burned, leaving no small stones half burned, as is inevitable in the old fashioned kilns. As it is neither burned too much nor too little, it is purer and stronger than other lime. The kilns are so constructed as to save about one-third of the wood and one half of the labor of other kilns, and are burned in fifty-four hours, no matter how large the kiln. It is only necessary to keep the fires properly tended with suitable fuel, to insure a burn with as much certainty and accuracy, as the baking of bread in ovens.

A new species of grasshopper has been very destructive to herbage of every kind this season in the vicinity of Mercersburg, Pa. It is of a light yellow color, larger than the ordinary species, and most voracious, devouring grass, corn, potatoes, onions, &c.—Farmers are obliged to take up their vegetables to save them from destruction; as this army of insects entirely strip the gardens, and not only cut the leaves of corn, but stalks an inch in diameter are eaten close to the ground.

TO CORRESPONDENTS.

S. B. G., of Ohio—Are you sure that a patent was granted for the signals you speak of? We cannot find the claims.

S. G. M., of Pa.—We cannot afford space to answer all your inquiries; you confound the permanent with the electro magnet: there is a great difference between the two: the latter is powerful in proportion to its size and strength of battery, and can work machinery, but how can you work machinery with the permanent magnet? You cannot do it, and the electro-magnet engine is not so economical as the steam engine.

F. J. C., of Mich.—We understand by your sketch and description that the water does not pass through your buckets, it is what is termed "a percussion wheel," a principle which some have endeavored to combine with re-action, and this was the claim in Parker's first wheel. We do not see a point on which we could base a claim for a patent. Your bucket appears to be the same as that of Guion's on page 41, Vol. 3, Sci. Am.

R. O D., of Miss.—As your letter presents no new information, it would be of no benefit to our readers to publish it; we hope that successful aerial navigation will yet be discovered, and are not skeptics, only as it relates to plans already tried; some new discovery must be made.

J. S, of Pa.—We have never had an opportunity of investigating the "rappings" in any family with which we were acquainted, and in which, from experience, we could place reliance; as you say, "we might have heard and seen such things in New York—but that would not satisfy us.

J. W., of Vt.—We do not see how any claim of novelty can be instituted for your connection of bevel gear with the shaft of a wind-mill; every millwright knows how to do the same thing.

J. H., of R. I.—By addressing H. C. Baird, publisher, Philadelphia, you may be able to obtain just the work you desire.

J K, of Ohio—The corn planter which you send us a diagram of, is not new in a patentable sense; there is no doubt but what you have changed the combination a trifle so that the machine may appear new to you, but the same elements are there, and we do not see any real improvement over other kinds.

J. H. Q., of Pa.—The plan of raising the signal without the attention of the bridge tender by such device as you mention is not new; it has been before suggested to us.

F. V. D, of N. Y.—Your ideas about cow-milkers are new, and a device of the kind could be patented if useful; try it.

A. W. D, of N. Y.—You will find a table for calculating the velocity of falling bodies on page 134, Vol. 6, Sci. Am. We cannot answer your second question, nor do we know any man who can.

Mrs. E. L., of Pa.—A caveat was filed about two years ago for a fore-runner to be attached to and to precede the locomotive, to warn the engineer of any obstruction that might be on the track.

N. B. P., of N. Y.—As nearly as we can understand your invention, from the drawing you send, it is essentially the same as one on whichan application for a patent is now pending before the Patent Office. The dollar received from you we have applied on account of subscription to the paper.

C. G., of Ohio—Your invention of the veneer cutting machine is quite antiquated; it was one of the first plans tried

L. D. A., of Ill.—We do not know of any machine which answers your description.

Money received on account of Patent Office business for the week ending Saturday, July 30:—

S. B. D., of Mich., $10; A. J., Jr., of N. Y, $30; J. P., of N. Y., $30; H. A. C., of Mass., $55; G. H., of N. Y, $30; H. V. N., of La., $75; H. F. D, of Miss, $20; G. H. B., of Phil., $90; N. C. F., of Ohio. $10; H. D. M., of N. Y., $50; A. D. C., of N. Y, $35; O. D. B., of Ohio, $420; N. B. W., of Ohio, $120.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday July 30:—

A. E. B., of R. I.; J. B., of Ct; J. K. & W. P. G of Pa.; J. F. O., of N. Y.; W. S, of Pa.; N. P. M. of N. Y.; H. W. A., of N. Y.

A Chapter of Suggestions, &c.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:—Of Volumes 1, 2 3 and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1?5. Of Volume 6, all; price in sheets, $2; bound, $2,?5. Of Vol. 7 all; price in sheets, $2; bound, $2,?5. Of Vol. 8, all the back numbers subsequent to No. 27, but none previous.

PATENT CLAIMS—Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office—stating the name of the patentee, and enclosing one dollar as fee for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, provided they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engraving executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

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